

## CLAIMS

1. A process for producing 1-hexene, which comprises trimerizing ethylene in the presence of a catalyst comprising  
5 a tantalum compound and an alkylating agent containing a metal under a condition wherein the water content in the reaction system is 4 moles or less per mole of the tantalum atom, and/or under a condition wherein the amount of molecular oxygen in the reaction system is 2 moles or less per mole of the tantalum atom.

10 2. The process for producing 1-hexene according to claim 1, wherein the water content in the reaction system is 3 moles or less per mole of the tantalum atom.

3. The process for producing 1-hexene according to claim 1, wherein the water content in the reaction system is 2 moles  
15 or less per mole of the tantalum atom.

4. The process for producing 1-hexene according to claim 1, wherein the water content in the reaction system is substantially anhydrous.

5. The process for producing 1-hexene according to any  
20 one of claims 1 to 4, wherein the amount of the molecular oxygen in the reaction system is 1.5 moles or less per mol of the tantalum atom.

6. The process for producing 1-hexene according to any one of claims 1 to 4, wherein the amount of the molecular oxygen  
25 in the reaction system is 1 mol or less per mole of the tantalum atom.

7. The process for producing 1-hexene according to any one of claims 1 to 4, wherein the amount of the molecular oxygen in the reaction system is substantially oxygen-free.

8. The process for producing 1-hexene according to any one of claims 1 to 7, wherein the tantalum compound is a tantalum halide.

9. The process for producing 1-hexene according to any one of claims 1 to 7, wherein the tantalum compound is tantalum pentachloride or tantalum pentabromide.

10. The process for producing 1-hexene according to any one of claims 1 to 9, wherein the alkylating agent is a hydrocarbyl metal, a hydrocarbyl metal halide, or an alkylaluminumoxane.

10 11. The process for producing 1-hexene according to any one of claims 1 to 9, wherein the alkylating agent is tetramethyltin, tetraethyltin, dimethylzinc, methyllithium, trimethylaluminum, n-butyllithium, allyltriphenyltin, triethylaluminum, dimethylaluminum chloride, tetraphenyltin, 15 methylaluminumoxane, or methylmagnesium bromide.